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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,218	06/27/2003	Michio Yamashita	04329.3085	5693

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EXAMINER	
PATEL, ANAND B	

ART UNIT	PAPER NUMBER
2116	

DATE MAILED: 10/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/607,218	YAMASHITA ET AL.	
	Examiner	Art Unit	
	Anand Patel	2116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-11 and 13-15* is/are rejected.

7)☒ Claim(s) *6,12 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Amendment filed 8/30/06 has been entered and as such claims 1-2, 5-6, 9-12 are amended.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-5, 7-11, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No 5564015 to Bunnell in view of US Patent No 6513124 to Furuichi et al (Furuichi).

- As per claim 1, Bunnell discloses a method of controlling a clock frequency of a processor, comprising:
  - Acquiring an activity count per unit time of the processor (24; 114);
  - Acquiring a clock count per unit time of the processor (52; column 7, lines 45-48);
  - Determining whether a ratio of the executable instruction count to the clock count exceeds a predetermined value (figure 10; column 9, line 55 – column 10, line 5); and
  - Controlling the clock frequency of the processor in accordance with a result of the determination (column 10, lines 6-14; 134, 138).

  Bunnell fails to disclose wherein the activity is a total executable instruction count and specifics regarding the instruction count. Furuichi teaches an activity count that is a total executable instruction count (column 3, lines 5-7). Furuichi also teaches the count being a count of instructions related to software programs, including an application and an operating system (OS), executed by the processor (column 4, lines 55-63). An advantage of the method taught by Furuichi is the ability to control the frequency of a processor according to a power consumption

index (column 2, lines 1-16). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Bunnell with the instruction count method as taught by Furuichi. Motivation to modify is to improve processor performance and decrease power consumption.

- As per claim 9, Bunnell discloses an electronic apparatus, comprising:
  - A control unit (58; column 10, lines 6-14; 134, 138) configured to control a frequency of a clock in accordance with a ratio of an activity count per unit time (24; 114) to a clock count per unit time (52; column 7, lines 45-48) of the clock (figure 10; column 9, line 55 – column 10, line 5).

  Furuichi teaches a clock oscillator configured to supply a clock signal (9) and a processor (3) configured to generate an internal clock on the basis of the clock signal supplied from the clock oscillator (column 4, lines 32-35). Furuichi also teaches an activity count that is a total executable instruction count (column 3, lines 5-7) and the count being a count of instructions related to software programs, including an application and an operating system (OS), executed by the processor (column 4, lines 55-63).
- As per claim 2, Furuichi teaches wherein a series of power control monitoring and controlling steps are repetitively executed at a predetermined time interval (column 8, lines 54-56). Bunnell and Furuichi teach the specific steps as outlined above.
- As per claim 3, Furuichi teaches wherein the predetermined time interval is changeable (column 8, lines 54-56).
- As per claim 4, Bunnell discloses the method wherein the control includes controlling to decrease the clock frequency of the processor when the ratio is determined not to exceed the predetermined value (column 13, lines 56-60; 138).
- As per claims 5, 11, Bunnell discloses the clock count (52; column 7, lines 45-48). Furuichi teaches wherein the determination includes determining whether a ratio of i) a difference between two

total executable instruction counts acquired successively (the inherent I_{u2}-I_u calculation given that the rate of change is being calculated) to ii) a clock count exceeds a predetermined value (column 3, lines 21-26).

- As per claims 7, 13, Bunnell discloses the method wherein the control includes increasing the clock frequency when the ratio is determined as a result of the determination to exceed the predetermined value, and decreasing the clock frequency when the ratio is determined not to exceed the predetermined value (134, 138; figure 12).
- As per claim 8, Bunnell discloses the method wherein the predetermined value is changeable (column 12, lines 54-59).
- As per claim 10, Bunnell discloses the apparatus wherein the control unit determines whether a ratio of the executable instruction count to the clock count exceeds a predetermined value (figure 10; column 9, line 55 – column 10, line 5) and controls a clock frequency of the processor in accordance with a result of the determination (column 10, lines 6-14; 134, 138).
- As per claim 14, Bunnell discloses the method, wherein controlling comprises changing the clock frequency of the processor based on the ratio and the predetermined value (column 10, lines 6-14; 134, 138). Furuichi teaches determining an operational mode from a plurality of operational modes (inherent given the determination of the threshold associated with a specific operating frequency; abstract), associated with a plurality of threshold values (inherent given that each threshold value of E_0 has a specific operating frequency that the system will adjust to) and selecting a threshold value associated with the determined operational mode as the predetermined value (predetermined E_0).

4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bunnell in view of Furuichi and US Patent No 6317840 to Dean et al (Dean).

- As per claim 15, Bunnell and Furuichi fail to specifically disclose three operational modes. Dean teaches wherein a plurality of operational modes includes at least a power saving mode, a standard

mode, and a high-speed mode (column 3, lines 44-49). An advantage of the system taught by Dean is the ability to decrease power consumption in a processor without decreasing performance (column 2, lines 13-35). It would have been obvious to one of ordinary skill in the art at the time of invention to modify Bunnell and Furuichi with the operational modes as taught by Dean. Motivation to modify is to lower power and cut costs without performance degradation.

Allowable Subject Matter

5. Claims 6, 12, 16 are objected to, for the reasons set forth in the previous Office Action, as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

6. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anand Patel whose telephone number is (571) 272-7211. The examiner can normally be reached on Mon-Fri 8AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Browne can be reached on (571) 272-3670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LYNNE H. BROWNE
SUPERVISORY PATENT EXAMINER
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ABP